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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/759,209
Filing Date: January 20, 2004
Appellant(s): KOBAYASHI, HIROYUKI

MAILED
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GROUP 3700

Bruce H. Bernstein
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/26/2007 appealing from the Office action mailed 10/24/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,371,908	FURUSAWA	4-2002
6,080,104	OZAWA	6-2000
6,734,894	HIGUCHI	5-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1,3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furusawa (6,371,908) in view of Ozawa (6,080,104) and in further view of Higuchi (6,734,894).

With regard to claim 1: Furusawa discloses a diagnosis supporting device connected to an endoscope system that captures an image of a subject faced to the tip of an endoscope to generate special observation image data for displaying a special observation image for diagnosis based on various image data transmitted from the endoscope system, said diagnosis supporting device comprising:

a light emitting section ("light source device 12," column 4 / line 60) that alternately emits excitation light ("light source (UV light source) 24," column 5 / line 26) to excite living tissue and reference light ("white light source 22," 4/61) to

illuminate the subject, said light emitting section including a light source which inherently varies the intensity of light in response to applied voltage;

a probe ("light guide 20," 4/61) that is inserted through a forceps channel to guide the excitation light and the reference light from a proximal end to a distal end;

an image data acquiring section ("solid state image sensor (CCD) 17," 4/34) that acquires fluorescent image data generated by the endoscope system ("the RGB image signal... is stored in the memory M1...") when the light emitting section emits the excitation light and acquires reference image data generated by the endoscope system ("and the F image signal... is stored in the memory MF," 10/15) when the light emitting section emits the reference light;

a light controller ("light source control unit 27," 5/55) that controls the intensity of the excitation light according to [a] first intensity coefficient ("adjusts, in accordance with an instruction... light amounts of... excitation light which are incident into the light guide 20," 5/55) and that controls the intensity of the reference light according to [a] second intensity coefficient ("adjusts, in accordance with an instruction... light amounts of illuminating light ... which are incident into the light guide 20," 5/55);

a calculating section ("PC14," 5/57) that calculates the first and second intensity coefficients ("instruction from, for example, PC14," 5/57) according to some first and second operational expressions.

Furusawa does not disclose:

that the calculating section ("PC14") calculates a first intensity coefficient ("instruction") according to a first operational expression which is based on the maximum brightness level of the fluorescent image data (stored in "MF," as noted above).

that the calculating section ("PC14") calculates a second intensity coefficient ("instruction") according to a second operational expression which is based on the maximum brightness level of the reference image data (stored in "M1," as noted above).

an intensity measuring section that extracts the maximum brightness level from the brightness levels of all the pixels in the fluorescent image data and extracts the maximum brightness level from the brightness levels of all the pixels in the reference image data whenever the image signal acquiring section acquires a set of the reference image data and the fluorescent image data;

that said first and second operational expressions are determined such that the intensities of said excitation light and said reference light increase as the maximum brightness levels of said fluorescent image data and said reference image data decrease.

Ozawa discloses an intensity measuring section that extracts the maximum brightness level from the brightness levels of all the pixels in the image data ("peak value detecting circuit 63," 1/44), which utilizes an operational expression which is

determined such that the intensity of the emitted light increases as the maximum brightness level of the image data decreases ("controls the size of the aperture 67 in accordance with a signal output from the peak value detecting circuit 63," 1/42).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that the calculating section disclosed by Furusawa ("PC14") calculate the intensity coefficients ("instruction") according to an operational expression which is based on the maximum brightness level of the image data. A skilled artisan would be motivated to do so in order to "maintain uniform ... peak brightness of the observed image" (1/47).

Furusawa discloses a light controller, as noted above. Furusawa is silent as to the particular means of controlling the intensity of emitted light, stating only that the "light source control unit 27" may be instructed to do so by the "PC14." Furusawa in view of Ozawa does not disclose that the light controller controls the intensities of said excitation light and said reference light without a variable diaphragm and without a light stop by changing the voltage applied to said light source.

Higuchi discloses the following in column 2, lines 54-59: "The light quantity compensating means may comprise light quantity controlling means for adjusting the outgoing light quantity from a light source during a period immediately before light shielding. The light quantity controlling means may variably control the lamp voltage or the aperture of a light quantity restrictor."

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that in reduction to practice, obvious alternatives to aperture control of

light emission be used. Higuchi discloses that lamp voltage control is just such an obvious alternative. A skilled artisan would be motivated to control a lamp voltage, as opposed to installing an aperture, because this requires fewer mechanical parts.

With regard to claim 3: Furusawa discloses

an affected-area-information acquiring section ("memory unit 40," 7/8) that determines whether a difference between brightness level of a pixel in said reference image data (as shown in Fig. 8, column 10 / lines 35-44) and brightness level of a pixel in said fluorescent image data at the corresponding position is larger than a predetermined threshold value ("second threshold," as shown in Fig. 11, 10/54-58) or not for all of the pixels in said reference image data whenever said image signal acquiring section acquires a set of said reference image data and said fluorescent image data, and that acquires position information that specifies the positions of the pixels whose differences are larger than said threshold value (as shown in Fig. 13, with reference to 11/16-18);

an image generating section ("M1," 11/31-34) that generates color image data ("indicated in blue") for displaying a monochromatic image on a monitor based on said reference image data acquired by said image data acquiring section;

an image composing section ("VRAM41," 11/42-45) that composes said color image data generated by said image generating section and said position information to convert the pixels on said color image data that are represented by

said position information into specified pixels exhibiting a predetermined color ("blue," as noted above); and

an output section ("monitor 15," 11/43) that outputs the composed color image data composed by said image composing section as special observation image data.

With regard to claim 4: Furusawa in view of Ozawa does not disclose that said specific pixels exhibit red. Furusawa discloses that said specific pixels exhibit blue. In reduction to practice, the specific color label may be left to the discretion of a skilled artisan as an obvious design choice.

With regard to claim 5: Furusawa discloses a "light guide 20," which does not necessarily consist of a number of optical fibers that are bundled up with one another. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. A skilled artisan would be motivated to do so in order to provide more light.

(10) Response to Argument

Applicant contends that "<u>the light source device 12 in FURUSAWA does not include a "light source that varies intensity of the excitation light and reference light in response to voltage applied to said light source"</u>." It is maintained that the lamps disclosed by Furusawa ("made up of a lamp," 4/62; "consisting of a lamp," 5/25) are inherently variable in their intensity "in response to a voltage applied to said light source." HIGUCHI, who discloses the recited light control, provides evidence of this well-known fact in the cited portions of his disclosure (2/54-59); HIGUCHI furthermore discloses the precise method of light control, i.e. voltage manipulation, recited by the Applicant.

Applicant contends that "<u>FURUSAWA does not disclose that the light guide 20 is "inserted through a forceps channel", and does not use the term "forceps" anywhere therein</u>." It is pointed out that Applicant does not recite a forceps *per se* in the claims or in the specification, and that the term is used exclusively to describe a channel for accommodating a light guide. The accommodations disclosed by FURUSAWA -- a hollow passage for permitting passage of a light guide -- are identical to those recited by the Applicant.

Applicant contends that "<u>FURUSAWA does not disclose any features of a "first intensity coefficient" separate and distinct from a "second intensity coefficient" as recited in claim 1</u>." It is maintained that, as noted above, the "PC14" disclosed by FURUSAWA instructs the respective intensities (via "light source control unit 27") of illumination and excitation light. Separate light emissions inherently require separate intensity coefficients. A specific case is illustrated in 5/25-54, where "PC14" instructs retractable

mirrors "25" and "26" to block white light and provide excitation light. This amounts to respective intensity coefficients of 0 and 1, although it is conceded that this terminology is not used by FURUSAWA. It is further conceded that the respective intensity coefficients are not "based on the maximum brightness level" of respective image data, nor in accordance with respective "operational expressions" -- thus the secondary OZAWA reference. Nevertheless, some first coefficient inherently exists which describes the intensity of the disclosed "UV light source 24"; some separate and distinct coefficient second coefficient inherently exists which describes the intensity of the disclosed "light source 22".

With regard to maximum brightness levels, Applicant suggests that <u>OZAWA teaches against detecting peak luminance values by additionally teaching the detection of average luminance values</u>. It is maintained that OZAWA teaches light source control based on detection of maximum brightness levels; it is further maintained that such a teaching is applicable to FURUSAWA "light source control unit 27". As noted above, the advantage of the light control taught by OZAWA is "uniform ... peak brightness of the observed image"; a skilled artisan would surely recognize that distracting fluctuations in the brightness of an image, whether it be fluorescent or white, are disadvantageous. Therefore, there is motivation to provide *excitation light* control according to a first operational expression based on maximum brightness levels; there is motivation to provide *white light* control according to a second operational expression based on maximum brightness levels.

Applicant contends that "the cited teachings of OZAWA are disclosed in relation to adjusting the size of an aperture and not in relation to varying a voltage applied to a light source. That is, the Final Office Action is premised on the incorrect assertion that FURUSAWA would inherently vary intensity of excitation light and reference light in response to voltage applied to a light source." In fact, the Final Office Action is premised on the assertion that -- to echo the Applicant's contention -- "Furusawa in view of Ozawa does not disclose that the light controller controls the intensities of said excitation light and said reference light without a variable diaphragm and without a light stop by changing the voltage applied to said light source" (see Final Office Action, paragraph [08]). In other words, it is HIGUCHI that suggests voltage control, a common form of intensity control, as an alternative to aperture manipulation. Applicant's argument that FURUSAWA and OZAWA are not combinable is not persuasive in view of HIGUCHI. As noted above, lamps such as those disclosed by FURUSAWA are inherently voltage-controllable. Peak detection as a form of intensity control is advantageous, as taught by OZAWA. Although OZAWA discloses controlling aperture size to control light intensity, HIGUCHI shows that FURUSAWA and OZAWA are not incompatible; that "uniform peak brightness" may be achieved independent of whether aperture size or lamp voltage is manipulated.

Applicant contends that "a significant difference may exist in brightness between fluorescent image data and reference image data, such that the combination of FURUSAWA and OZAWA would not result in excitation light intensity being controlled appropriately, as it would be controlled in the same manner as the reference light." This

is not persuasive. FURUSAWA discloses separate observational modes: separate storage of fluorescent and white image signals (10/10-18) and separate voltage-controllable lamps for excitation and white light (as noted above). The teachings of OZAWA and HIGUCHI are applicable to both types of observation, and FURUSAWA's invention lends itself to obvious modification by disclosing separate observational modes.

With regard to HIGUCHI, Applicant contends that "the cited motivation to control a lamp voltage rather than install an aperture in FURUSAWA, i.e., because controlling a lamp voltage "requires fewer mechanical parts", is speculative and not based on a teaching in any document applied in the Office Action." It is maintained that a skilled artisan would recognize certain advantages to voltage-control as opposed to aperture control, such as, e.g., fewer mechanical parts. No speculation is required to make such a judgment. HIGUCHI is provided to show what is commonly known to those of ordinary skill the art of endoscopy.

Applicant contends that "voltage control in HIGUCHI is only disclosed to be controlled with respect to a single type of light, and not with respect to both "excitation light" and "reference light". That is, HIGUCHI does not so much as use the term "excitation light" or any similar term in the specification." It is maintained that manipulating a lamp voltage to control emission intensity is well-known in the art; that it has certain advantages, such as requiring fewer mechanical parts; and that it is applicable to UV lamps just as it is applicable to white-light lamps.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

(12) Conclusion

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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